

REMARKS

Claims 1, 5-10 and 21-23 are all the claims pending in the application.

Claim Rejections

A) Claims 1, 5-7, 10, 21 and 22

Claims 1, 5-7, 10, 21 and 22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jun et al. (U.S. Patent No. 6,873,391) in view of Iguchi (JP 2000-314893).

Claims 1 and 22 are independent claims. Claims 5-7, 10 and 21 depend from claim 1.

Claim 1 recites spacers located in a display region and no spacers located in a non-display region. Claim 1 also recites that a buffer space which receives extra liquid crystal is formed in the non-display region. The depression forming the buffer space is substantially vacant except for the received extra liquid crystal. For example, the non-limiting embodiment of Fig. 9 of the application shows spacers 24 in a display region 18. A depression forming a buffer space 68 is formed in the non-display region is formed to receive extra liquid crystal 16. The present application teaches that providing this buffer space allows for the gap between the first and second substrates 12, 14 to be uniform (*see* page 28, lines 8-13). Without the buffer space, excess liquid crystal can cause variations in the gap between the substrates 12, 14. As shown in Fig. 9, the buffer space 68 is empty except for the excess liquid crystal received by the space.

In contrast to the claimed invention, Jun does not include a depression which is substantially vacant except for receiving extra liquid crystal. The Examiner asserts that Jun teaches a depression 13. As shown in Jun Fig. 6, a ridge 11 is fitted to the depression 13. Thus,

the depression 13 is not substantially vacant except for liquid crystal, as is the depression of claim 1. Instead, the depression 13 is substantially filled with the ridge 11. Accordingly, the Jun depression 13 cannot receive extra liquid crystal in the same manner or degree as the claimed depression.

Furthermore, the intent and design of Jun are different than the present application. Jun teaches that locating the correct amount of liquid crystal inside the seal 2 is difficult. Jun also teaches that an excessive amount of liquid crystal inside the seal 2 can lead to damage to the seal 2 during bonding, resulting in a defective panel or a panel with poor adhesion between substrates. In particular, when the liquid crystal 3 contacts the top of the seal 2 the bond between first and second glass substrates 1 and 4 can be weakened. Accordingly, Jun discloses a device with a groove 13 formed on a first substrate 1 and a ridge 11 formed on a second glass substrate 5, the combination of which keeps the appropriate amount of liquid crystal in the display region and pushes out excess liquid crystal.

In order to form the device of Jun, a seal 2 is coated on the second glass substrate 5. Then, as shown in Fig. 6, the second glass substrate 5 is turned over and a liquid crystal 3 is dropped onto the second glass substrate 5 and within the ridge 11. The first glass substrate 1 and the second glass substrate 5 are then bonded together by the seal 2 after fitting the ridge 11 inside the groove 13. While bonding, the first glass substrate 1 and the second glass substrate 5 are slowly pressed together such that the dropped liquid crystal 3 is spread evenly across the area defined by the ridge 11 (*see* column 4, lines 20 to 30). This structure automatically presses out extra liquid crystal in the display region to the outside of the display region by way of the gap

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formed between the ridge 11 and the groove 13 during the bonding process, thereby ensures the correct amount of the liquid crystal 3 inside the seal 2. That is, with the LCD panel of Jun et al., the extra liquid crystal is not received in the groove 13. Instead, the ridge defines an area in the display region for an amount of liquid crystal and presses out extra liquid crystal. This is clearly different from the claimed invention where the buffer space 68 is substantially vacant so that it serves as a space for receiving liquid crystal.

The Examiner cites Iguchi only as teaching spacers only in a display region. Even if the Examiner's assertions regarding Iguchi were correct, Iguchi still would not correct the deficiencies of Jun with respect to claim 1. Accordingly, claim 1 is allowable over the combined teachings and suggestions of Jun and Iguchi. Claim 22 is allowable at least for reasons similar to claim 1 and claims 5-7, 10 and 21 are allowable at least by virtue of their dependency from claim 1.

B) Claims 8 and 23

Claims 8 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jun in view of Iguchi, and further in view of Kijima et al. (U.S. Patent No. 6,259,500). Claim 8 depends from claim 1 and claim 23 depends from claim 22. Even if the Examiner's assertions regarding Kijima were correct, it still would not correct the above noted deficiencies of the combination of Jun and Iguchi with respect to claims 1 and 22. Accordingly, claims 8 and 23 are allowable at least by virtue of their respective dependencies.

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C) Claim 9


Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Jun in view of Iguchi, and further in view of Kurauchi et al. (U.S. Patent No. 5,917,572). Claim 9 depends from claim 1. Even if the Examiner's assertions regarding Kurauchi were correct, it still would not correct the above noted deficiencies of the combination of Jun and Iguchi with respect to claim 1. Accordingly, claim 9 is allowable at least by virtue of its dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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